

This is the **Higher Combined** version — includes Higher Tier content. Some Separate-only details are omitted.

Viruses cause disease by invading host cells and replicating inside them, destroying the cells in the process.

- Measles: virus spread by droplets. Symptoms: fever, red skin rash. Serious — can be fatal, especially in young children. Prevented by MMR vaccine.
 - HIV (Human Immunodeficiency Virus): spread by sexual contact or infected blood (e.g. sharing needles). Attacks white blood cells (CD4+ T cells), weakening the immune system. Leads to AIDS.
 - AIDS (Acquired Immunodeficiency Syndrome): the late stage of HIV infection when the immune system is severely compromised → opportunistic infections become life-threatening.
 - HIV is treated with antiretroviral drugs which slow progression but cannot cure. Condoms prevent sexual transmission.
 - Tobacco Mosaic Virus (TMV): infects plants. Mosaic pattern on leaves — disrupts chlorophyll production. Reduces photosynthesis → reduces growth.
- ★ **HT** Influenza virus: constantly mutates (antigenic variation) — new strains require new vaccines each year.

Key Terms

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| HIV | Human Immunodeficiency Virus — attacks CD4+ T helper lymphocytes, leading to AIDS |
| AIDS | Acquired Immunodeficiency Syndrome — late stage HIV infection where immune system fails |
| Antiretroviral drugs | Drugs that slow HIV replication — cannot cure HIV but prevent progression to AIDS |
| TMV | Tobacco Mosaic Virus — infects plants, disrupts chlorophyll, reduces photosynthesis |

■ **Exam Tip:** For HIV/AIDS questions: HIV = the virus; AIDS = the condition that results when the immune system fails. HIV attacks CD4+ T cells — this is what makes the immune system fail. Know how each viral disease spreads and how it is prevented.